

CLAIMS

What is claimed is:

1. An output frame for a die sorter, comprising:
at least one channel along the upper surface of
5 the output frame, wherein the channel holds a
plurality of die carriers and has an open end and a
closed end;
a barrier located at the closed end of each
channel; and
10 a retention mechanism for each of the plurality
of die carriers, wherein the retention mechanism is
along a side of the channel and biases the die
carrier against the opposing side of the channel.
- 15 2. The output frame of Claim 1, wherein the output
frame is handled in the same manner during the die
sorting process as an output wafer frame.
- 20 3. The output frame of Claim 1, wherein the output
frame has the same physical exterior dimensions as a SEMI
standard film frame design for an 8-inch or 12-inch
wafer.
- 25 4. The output frame of Claim 1, wherein the die
carriers are waffle packs or GEL-PAK die carriers.
5. The output frame of Claim 1, wherein the die
carriers are approximately 2" by 2".
- 30 6. The output frame of Claim 5, further comprising
four channels in parallel with each other.
7. The output frame of Claim 6, wherein the four
channels comprise two outer channels capable of holding

two 2" by 2" die carriers each and two inner channels capable of holding four 2" by 2" die carriers each.

8. The output frame of Claim 1, wherein the die
5 carriers are approximately 4" by 4".

9. The output frame of Claim 8, wherein the at least one channel is a single channel.

10 10. The output frame of Claim 9, wherein the single channel is capable of holding two 4" by 4" die carriers.

11. The output frame of Claim 1, wherein the output frame and the at least one channel are a unitary
15 structure.

12. The output frame of Claim 1, wherein the retention mechanism is a spring clip.

20 13. An output frame for use with a die sorter, comprising:

a plurality of approximately square recesses, each square recess capable of holding one square die carrier or die, wherein the output frame is handled
25 in the same manner during the die sorting process as an output wafer frame.

14. The output frame of Claim 13, wherein the output frame has the same physical exterior dimensions as
30 a SEMI standard film frame design for an 8-inch or 12-inch wafer.

15. The output frame of Claim 13, wherein the die carriers or dice are approximately 2" by 2" or 4" by 4".

16. The output frame of Claim 13, wherein the frame is a unitary structure.

5 17. A die sorter for sorting die contained in square die carriers, comprising:
 an input wafer cassette;
 a plurality of wafer frames containing the die,
 wherein the wafer frames are capable of being loaded
10 and unloaded from the input wafer cassette;
 a first wafer frame handler for loading and unloading the wafer frames;
 an output wafer cassette;
 a plurality of adapter frames, wherein the
15 adapter frames are capable of being loaded and unloaded from the output wafer cassette, and wherein the adapter frames comprise at least one recess capable of holding a plurality of die carriers having an open end and a closed end;
20 a second wafer frame handler for loading and unloading the adapter frames; and
 a die sorting mechanism to sort the die onto the die carriers on the adapter frames.

25 18. The die sorter of Claim 17, wherein the adapter frames are handled in a similar way as an wafer frame.

 19. The die sorter of Claim 17, wherein the die carriers are waffle packs or GEL-PAK die carriers.
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 20. The die sorter of Claim 17, wherein the adapter frames each comprise a plurality of parallel recesses, each recess capable of holding a plurality of the die carriers.

21. The die sorter of Claim 20, wherein the adapter frames each further comprise a retention mechanism along one side of the recesses.

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22. The die sorter of Claim 17, wherein the adapter frames have the same physical exterior dimensions as a SEMI standard film frame design for 8-inch or 12-inch wafers.

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23. A method of die sorting, comprising:
unloading an adapter frame from an output wafer cassette;
sliding a plurality of die carriers into at
least one slot on the adapter frame;
securing each of the die carriers within the slot; and
loading the adapter frame back into the output wafer cassette.

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24. The method of Claim 23, wherein the unloading and the loading are by the same process as unloading and loading a wafer frame.

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25. The method of Claim 23, wherein the die carriers are square die carriers.

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26. The method of Claim 25, wherein the die carriers approximately 2" by 2" or 4" by 4".

27. The method of Claim 26, wherein the die carriers are waffle packs or GEL-PAK die carriers.

28. The method of Claim 23, wherein the securing is by applying a spring force to a side of the die carrier to bias the opposite side of the die carrier against a side of the slot.

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29. The method of Claim 23, wherein the adapter frame has the same physical exterior dimensions as a SEMI standard film frame design for an 8-inch or 12-inch wafer.

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